

First record of *Angarozonium aduncum* (Mikhajlova in Mikhajlova & Basarukin, 1996) (Diplopoda, Polyzoniida, Polyzoniidae) from mainland Hokkaido, Japan

Natsuki Hirakizawa¹, Ryosuke Kuwahara², Takeo Yamauchi¹

¹ Laboratory of Entomology, Obihiro University of Agriculture and Veterinary Medicine, Obihiro, Hokkaido, Japan

² Inzai, Chiba, Japan

Corresponding author: Takeo Yamauchi (tyamauchi@obihiro.ac.jp)

Abstract. *Angarozonium aduncum* (Mikhajlova in Mikhajlova & Basarukin, 1996) (Diplopoda, Polyzoniida, Polyzoniidae) is reported for the first time in mainland Hokkaido, Japan. This species was recorded from almost all areas of mainland Hokkaido and Rishiri Island at altitudes between 1 and 1,780 m.

Key words. Distribution, egg, millipede, molting, new record

Hirakizawa N, Kuwahara R, Yamauchi T (2024) First record of *Angarozonium aduncum* (Mikhajlova in Mikhajlova & Basarukin, 1996) (Diplopoda, Polyzoniida, Polyzoniidae) from mainland Hokkaido, Japan. Check List 20 (6): 1292–1297. <https://doi.org/10.15560/20.6.1292>

INTRODUCTION

The order Polyzoniida (Diplopoda) consists of three families, 23 genera, and 72 species worldwide (Enghoff et al. 2015). In Japan and the southern Kuril Islands, three families (Polyzoniidae, Hirudisomatidae, Siphonotidae), four genera (*Angarozonium* Shelley, 1998, *Orsiboe* Attems, 1909, *Kiusiozonium* Verhoeff, 1941, and *Rhinotus* Cook, 1896), and six species (*A. aduncum* (Mikhajlova in Mikhajlova & Basarukin, 1996), *O. ichigomensis* Attems, 1909, *O. putricola* Attems, 1951, *K. japonicum* Verhoeff, 1941, *K. okai* (Takakuwa & Miyosi, 1949), and *Rhinotus okabei* (Takakuwa, 1942)) are known (Attems 1909, 1951; Verhoeff 1941; Takakuwa 1942; Takakuwa and Miyosi 1949; Miyosi 1959; Mikhajlova 1990; Mikhajlova and Basarukin 1996; Mikhajlova 2009; Gongalsky et al. 2014; Shinohara et al. 2015; Mikhajlova 2016). Japanese Polyzoniida requires taxonomic study, for example *Rhinotus okabei* (Takakuwa, 1942), which has been suggested to be a junior synonym of *R. purpureus* (Pocock) (Shinohara et al. 2015).

Angarozonium Shelley, 1998 (Polyzoniidae) is distributed in Siberia, the Russian Far East, southern Sakhalin Island, Kunashir Island, Shikotan Island, northeast China, Mongolia, and North Korea (Mikhajlova et al. 2000; Mikhajlova 2004). According to Shelley (1998), the genus *Angarozonium* is defined by the characteristic of distal podomere of anterior gonopod hirsute and simple, without expansions, lobes or flanges, terminating in variable numbers of moderately long hairs. Since Shelley (1998), one new species was described, and now six are known (Mikhajlova et al. 2000). Although Shelley (1998) pointed out that *Angarozonium* might be distributed on Hokkaido Island, it has not been found there yet. In the present paper, we report *A. aduncum* (Mikhajlova in Mikhajlova & Basarukin, 1996) from mainland Hokkaido, Japan for the first time.



METHODS

Academic editor: Peter Decker

Received: 4 August 2024

Accepted: 3 September 2024

Published: 12 November 2024

Copyright © The authors. This is an open-access article distributed under terms of the Creative Commons Attribution License (Attribution 4.0 International – CC BY 4.0)

Specimens used in this study were collected on mainland Hokkaido and Rishiri Island, Japan from 2001 to 2024 (Figure 1). All specimens were preserved in 70% or 99.5% ethanol. Some individuals were reared at room temperature in plastic containers including soil. Occasionally, they were watered and observed. Specimens were identified under a stereomicroscope (Olympus SZX16) and a light microscope (Nikon ECLIPSE Ni) according to Mikhajlova and Basarukin (1996). The whole body, molting shell, and gonopods were photographed using a mirrorless camera (Olympus OM-D E-M1), a digital camera (Olympus Tough TG-6), and a single-lens reflex camera (Canon EOS Kiss X10). Photographs of gonopods were focus-stacked using focus-stacking software (Zerene Stacker). Body length and body width were measured using ImageJ

or Hakarundesu v. 0.8.0, oneglan.net (Kazuyoshi Natsume, Shizuoka, Japan) (software to measure segmented line length on screen), and body segments (including collum and telson) were counted. Voucher specimens are deposited in the Natural History Museum and Institute, Chiba (CBM), and Rishiri Town Museum (RTMMYR), Japan. Other specimens have been kept in the collection of the Laboratory of Entomology, Obihiro University of Agriculture and Veterinary Medicine, Obihiro, Hokkaido, Japan (OUAVM), and with the second author (RK).

The study on Rishiri Island was conducted with permission from the Rishiri-Rebun-Sarobetsu National Park Special Area and Special Protection Zones for the extraction of soil and rocks and the collection of animals (permit no. 2403281).

RESULTS

Order Polyzoniida Cook in Cook & Collins, 1895

Family Polyzoniidae Gervais, 1844

Genus *Angarozonium* Shelley, 1998

***Angarozonium aduncum* (Mikhajlova in Mikhajlova & Basarukin, 1996)**

Polyzonium aduncum Mikhajlova in Mikhajlova and Basarukin 1996: 89–91, map 1, figs. 1–3.

Polyzonium cyathiferum—Mikhajlova 1990: 137 (only Kunashir Island).

Angarozonium aduncum—Shelley 1998: 30; Mikhajlova 1998b: 9, 11–12; map 2, figs. 21, 22; Mikhajlova 2004: 36, 43–45, map 2, figs. 20, 21; Mikhajlova and Marusik 2006: 116, 122, 124–125, figs. 1, 2; Mikhajlova 2009: 63–64, figs. 1, 2; Gongalsky et al. 2014: 371; Mikhajlova 2016: 2; Mikhajlova 2022: 28, 41.

Figures 1, 2

New records. JAPAN – HOKKAIDO PREFECTURE • Rishiri Island, Soya District, Rishirifuji Town, Oshidomari; 45°14'32"N, 141°13'15"E; ca. 20 m alt.; 6.VI.2024; N. Hirakizawa leg.; 1 ♀, RTMMYR42 • Rishiri Island, Soya District, Rishirifuji Town, Oshidomarihonchō; 45°14'29"N, 141°13'13"E; ca. 20 m alt.; 5.VI.2024; R. Kuwahara leg.; 1 ♀, RTMMYR43 • Rishiri Island, Soya District, Rishirifuji Town, Oshidomarihonchō; 45°14'29"N, 141°13'13"E; ca. 20 m alt.; 5.VI.2024; T. Yamauchi leg.; 2 ♂, RTMMYR44–45 • Rishiri Island, Soya District, Rishirifuji Town, Oshidomarisakaemachi; 45°14'25"N, 141°13'06"E; ca. 30 m alt.; 6.VI.2024; R. Kuwahara leg.; 1 ♂ 1 ♀, RTMMYR46–47 • Rishiri Island, Soya District, Rishirifuji Town, Oshidomarisakaemachi; 45°14'25"N, 141°13'06"E; ca. 30 m alt.; 6.VI.2024; R. Kuwahara leg.; 1 ♂, OUAVM • Rishiri Island, Soya District, Rishirifuji Town, Oshidomarisakaemachi; 45°14'25"N, 141°12'53"E; ca. 40 m alt.; 6.VI.2024; R. Kuwahara leg.; 4 ♂, OUAVM • Rishiri Island, Soya District, Rishirifuji Town, Oshidomariwannai; 45°13'34"N, 141°14'51"E; ca. 130 m alt.; 5.VI.2024; T. Yamauchi leg.; 1 ♂, RTMMYR48 • Hokkaido Island, Okhotsk District, Ômu Town; 44°30'46"N, 142°52'19"E; ca. 150 m alt.; 08.VI.2024; N. Hirakizawa leg.; 1 ♂, OUAVM • Hokkaido Island, Okhotsk District, Mombetsu Town, Ôyama-chō; 44°20'28"N, 143°20'03"E; ca. 110 m alt.; 27.IV.2023; N. Hirakizawa leg.; 2 ♂ 8 juv., OUAVM • Hokkaido Island, Okhotsk District, Engaru Town, Maruseppu, Kamimurii; 43°55'50"N, 143°20'00"E; ca. 270 m alt.; 27.IV.2023; N. Hirakizawa leg.; 1 ♂, OUAVM • Hokkaido Island, Okhotsk District, Engaru Town, Maruseppu, Kamimurii; 43°55'50"N, 143°20'00"E; ca. 270 m alt.; 15.IV.2024; N. Hirakizawa leg.; 1 ♂, OUAVM • Hokkaido Island, Kamikawa District, Kamikawa Town, Mt. Daisetsu, near Chubetsu-numa Pond; 43°36'10"N, 142°53'52"E; ca. 1,780 m alt.; 03.VII.2001; M. Maruyama and H. Sugaya leg.; 26 ♂ 11 ♀ 80 juv., CBM-828–830 • Hokkaido Island, Kamikawa District, Kamikawa Town, Mt. Daisetsu, near Chubetsu-goya Hut; 43°34'42"N, 142°53'45"E; ca. 1,640 m alt.; 03.VII.2001; M. Maruyama and H. Sugaya leg.; 1 ♂ 2 juv., CBM-831 • Hokkaido Island, Rumoi District, Teshio Town, Kawaguchi; 44°54'03"N, 141°45'32"E; 6 m alt.; 24.IX.2023; R. Wakimura leg.; 1 ♀, CBM-832 • Hokkaido Island, Kushiro District, Akkeshi Town, Aikappu; 43°01'10"N 144°50'20"E; ca. 80 m alt.; 12.VI.2021; T. Yamauchi and N. Hirakizawa leg.; 1 ♂ 1 juv., OUAVM • Hokkaido Island, Kushiro District, Akkeshi Town, Aikappu; 43°01'10"N, 144°50'20"E; ca. 80 m alt.; 17.X.2021; N. Hirakizawa et al. leg.; 1 ♀, OUAVM • Hokkaido Island, Kushiro District, Kushiro City, Ombetsu-chō, Chokubetsu; 42°51'30"N, 143°52'43"E; ca. 20 m alt.; 18.X.2021; N. Hirakizawa leg.; 15 ♂ 1 ♀ 7 juv., OUAVM • Hokkaido Island, Kushiro District, Kushiro Town, Toritōshi; 43°03'20"N, 144°27'16"E; 2 m alt.; 06.V.2022; Y. Isono leg.; 2 ♂, CBM-841 • Hokkaido Island, Kushiro District, Kushiro Town, Toritōshi; 43°03'20"N, 144°27'16"E; 2 m alt.; 06.V.2022; Y. Isono leg.; 1 ♂, CBM-842 • Hokkaido Island, Tokachi District, Kamishihoro Town, Mitsumata; 43°30'17"N, 143°08'49"E; ca. 650 m alt.; 13.V.2023; N. Hirakizawa leg.; 1 juv., OUAVM • Hokkaido Island, Tokachi District, Kamishihoro Town, Nukabiragensenkyo; 43°22'04"N, 143°11'37"E; ca. 530 m alt.; 24.X.2021; N. Hirakizawa leg.; 1 ex., OUAVM • Hokkaido Island, Tokachi District, Kamishihoro Town, Kamiotofuke; 43°14'12"N, 143°12'11"E; ca. 340 m alt.; 17.IX.2021; N. Hirakizawa leg.; 1 ♀, CBM-833 • Hokkaido Island, Tokachi District, Obihiro City, Iwanai-senkyō; 42°40'13"N, 143°01'58"E; ca. 250 m alt.; 24.VIII.2020; T. Yamauchi leg.; 1 ♂, CBM-834 • Hokkaido Island, Tokachi District, Nakasatsunai Village, Minamisatsunai; 42°35'53"N, 142°57'16"E; ca. 380 m alt.; 14.IV.2022; N. Hirakizawa and S. Kajiwara

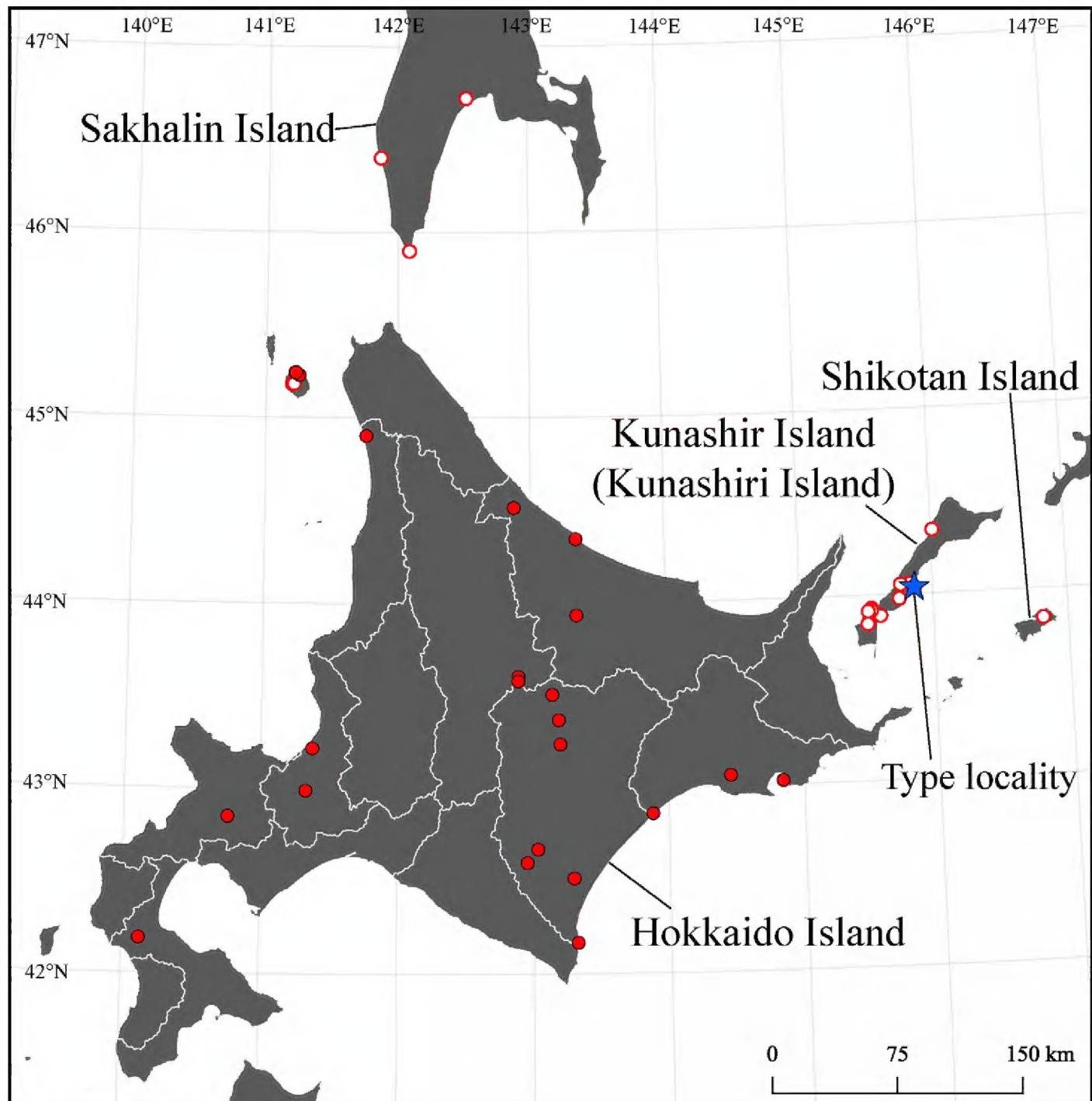


Figure 1. Distributional records of *Angarozonium aduncum*. Closed circles - locality of specimens examined, open circles - previous records (Mikhailova and Basarukin 1996; Mikhailova 1990, 2009, 2016; Maehara et al. 2003; Gongalsky et al. 2014).

leg.; 1 juv., OUAVM • Hokkaido Island, Tokachi District, Taiki Town, Moiwa; 42°30'46"N, 143°17'46"E; ca. 100 m alt.; 19.VI.2024; I. Maezaki and R. Saito leg.; 1 ♀, OUAVM • Hokkaido Island, Tokachi District, Hiroo Town, Bitatanunke; 42°10'00"N, 143°19'13"E; ca. 20 m alt.; 09.VII.2023; R. Wakimura leg.; 1 ♀, OUAVM • Hokkaido Island, Tokachi District, Hiroo Town, Bitatanunke; 42°10'00"N, 143°19'13"E; ca. 20 m alt.; 31.VIII.2023; R. Wakimura leg.; 1 ♂ 1 ♀, CBM-835–836 • Hokkaido Island, Ishikari District, Sapporo City, Minami-ku, Kawazoe-chō; 42°59'16"N, 141°19'35"E; ca. 140 m alt.; 22.IV.2022; R. Wakimura leg.; 1 ♀, CBM-839 • Hokkaido Island, Ishikari District, Sapporo City, Minami-ku, Kawazoe-chō; 42°59'16"N, 141°19'35"E; ca. 140 m alt.; 26.VI.2022; R. Wakimura leg.; 1 ♀, OUAVM • Hokkaido Island, Ishikari District, Sapporo City, Minami-ku, Kawazoe-chō; 42°59'16"N, 141°19'35"E; ca. 140 m alt.; 20.IX.2022; R. Wakimura leg.; 3 ♂, CBM-837 • Hokkaido Island, Ishikari District, Sapporo City, Minami-ku, Kawazoe-chō; 42°59'16"N, 141°19'36"E; ca. 140 m alt.; 16.X.2022; R. Wakimura leg.; 1 ♂, CBM-838 • Hokkaido Island, Ishikari District, Ishikari City, Funabachō; 43°12'58"N, 141°22'26"E; 2 m alt.; 29.V.2022; Y. Isono leg.; 1 ♀, CBM-843 • Hokkaido Island, Ishikari District, Ishikari City, Funabachō, Makunbetsu Wetland; 43°12'57.66"N, 141°22'25.75"E; ca. 1 m alt.; 23.IV.2023; Y. Isono and K. Takeshita leg.; 3 ♂ 2 ♀, RK • Hokkaido Island, Shiribeshi District, Kutchan Town, Takamine, Mt. Yōtei-zan; 42°50'46"N, 140°45'26"E; ca. 340 m alt.; 08.X.2023; N. Hirakizawa leg.; 2 ♂ 2 ♀ 1 juv., CBM-840 • Hokkaido Island, Shiribeshi District, Kutchan Town, Takamine, Mt. Yōtei-zan; 42°50'46"N, 140°45'26"E; ca. 340 m alt.; 08.X.2023; N. Hirakizawa leg.; 3 ♂ 3 ♀, OUAVM • Hokkaido Island, Shiribeshi District, Kutchan Town, Takamine, Mt. Yōtei-zan; 42°50'47"N, 140°45'25"E; ca. 342 m alt.; 08.X.2023; R. Kuwahara leg.; 4 ♂, RK • Hokkaido Island, Oshima District, Yakumo Town, Namarikawa; 42°11'10"N, 140°07'24"E; ca. 200 m alt.; 09.X.2023; N. Hirakizawa leg.; 1 ♂ 2 ♀, OUAVM • Hokkaido Island, Oshima District, Yakumo Town, Namarikawa; 42°11'10"N, 140°07'24"E; ca. 200 m alt.; 21.IV.2024; N. Hirakizawa leg.; 1 ♀ 1 juv., OUAVM.

Identification. On the basis of Mikhailova and Basarukin (1996), we identified all specimens as *A. aduncum* by the semi-cylindrical shape of the anterior gonopod coxal processes (Figure 2E) and the unciform process at the latter's external edge (Figure 2E).

Measurements. Males ($n = 78$): body 4.5–16.7 mm in length, 1.0–1.9 mm in width, body segments (including collum and telson) varying from 25 to 44 in number. Females ($n = 33$): body 5.4–18.6 mm in length, 1.1–1.9 mm in width, body segments (including collum and telson) varying from 28 to 46 in number.

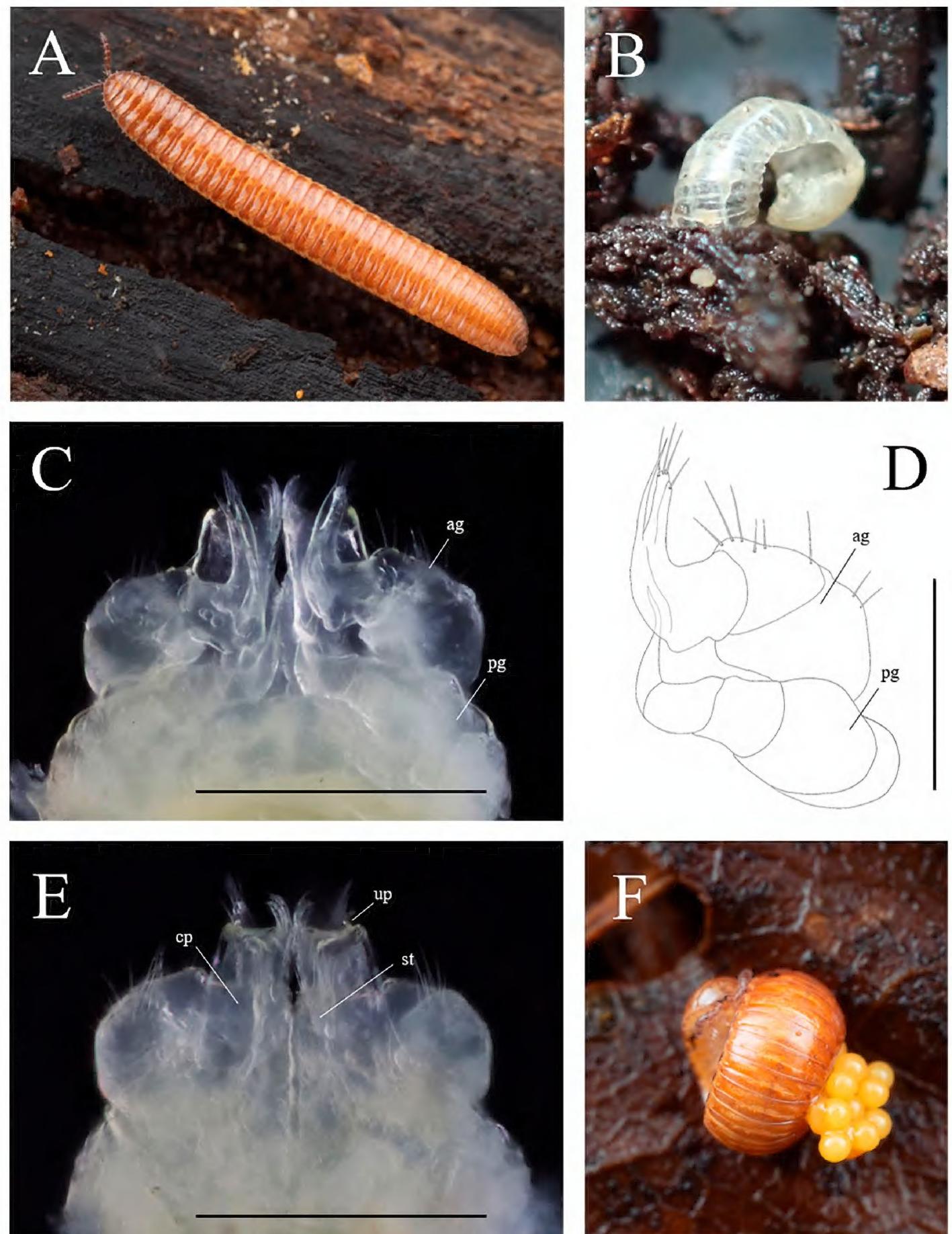


Figure 2. *Angarozonium aduncum*. **A.** Habitus, dorsal view (Kutchan Town). **B.** molting shell (Sapporo City, Minami-ku). **C.** gonopods, posterior view (Hiroo Town, Bitatanunke). **D.** left gonopods, posterior view (Hiroo Town, Bitatanunke). **E.** gonopods, anterior view (Hiroo Town, Bitatanunke). **F.** curling around to guard eggs (Rishiri Island, Rishirifushi Town). Abbreviations: ag, anterior gonopod; pg, posterior gonopod; up, unciform process; cp, coxal process; st, sternite. Scale bars: C, E = 0.4 mm; D = 0.2 mm.

Remarks. According to Mikhaljova and Basarukin (1996), the record of *Polyzonium cyathiferum* Mikhaljova, 1981 from Kunashir Island by Mikhaljova (1990) misidentified *A. aduncum*. On the other hand, *P. cyathiferum* was considered a junior subjective synonym of *Angarozonium amurense* (Gerstfeldt, 1859) by Shelley (1998) and reconfirmed by Mikhaljova (1998a).

Ecology. *Angarozonium aduncum* has been collected in woodland mosses and forest litter, and also on the banks of lakes (Mikhaljova 1998b). In this study, this species was collected mainly from forest litter. After *A. aduncum* specimens collected from Sapporo City were reared, two individuals were molted. The molting shells were left in the rearing container, and *A. aduncum* did not eat them (Figure 2B).

It has been known that the female of polyzoniid millipedes protect her eggs (Enghoff et al. 2015). We found a female of *A. aduncum* curling around to guard 21 eggs in Rishirifushi Town, Rishiri Island (Figure 2F).

DISCUSSION

Although *Angarozonium aduncum* has been previously recorded from southern Sakhalin, Kunashir, and Shikotan Islands (Mikhaljova and Basarukin 1996; Mikhaljova 1990, 2009, 2016, 2022; Gongalsky et al. 2014), the species was newly recorded from almost all areas of mainland Hokkaido at altitudes between 1 and 1,780 m in the present study. This species was collected on Hokkaido not only in the lowlands but also in the high mountains.

Maehara et al. (2003) recorded Hirudisomatidae gen. sp. from the Kutsugata trail at altitudes of 200 m, 400 m, and 600 m in Rishiri Town, Rishiri Island in June. In the present study, we studied at the same site and same month but did not find polyzoniid millipedes. Instead, we collected only *A. aduncum* at several sites on Rishiri Island. Therefore, the previous record of Hirudisomatidae gen. sp. on Rishiri Island is considered to be a misidentification of *A. aduncum*.

Polyzoniid millipedes continuously add segments during development for an indeterminate period of time, even after adulthood (Enghoff et al. 1993). Previously, *A. aduncum* was reported to have a body length of 6–10 mm, a body width of 0.9–1.9 mm, and a total number of body segments (including collum segment and telson) ranging from 31 to 39 (Mikhajlova 2004). In this study, the maximum body length was 18.6 mm, the maximum body width was 1.9 mm, and the largest number of segments was 46 from a specimen near Chubetsu-numa Pond, Mt. Daisetsu, Kamikawa Town, Hokkaido, Japan. No significant differences were found in the morphology of the gonopods and other characteristics of specimens collected at high altitudes and those collected in other areas.

ACKNOWLEDGEMENTS

We would like to express our cordial thanks to Mr. Ryotaro Wakimura, Dr. Munetoshi Maruyama, Dr. Hiroshi Sugaya, Mr. Yu Isono, Mr. Keigo Takeshita, Ms. Io Maezaki, and Ms. Rio Saito for collecting the specimens, Ms. Moeko Toda, Mr. Yusuke Koike, Ms. Satsuki Kajiwara, and Ms. Sakura Kojima for helping with the research, Mr. Masahiko Sato, Dr. Shinri Tomioka, and Mr. Yuzo Kodama for providing valuable advice for our study on Rishiri Island and Mr. Glen Hill for proofreading the English. This work was partly supported by JSPS KAKENHI grant number JP23KJ0075, a grant-in-aid for Scientific Research of Lake Akkeshi and Bekanbeushi Wetland 2021, a grant from Rishiri Research Project (FY2024).

ADDITIONAL INFORMATION

Conflict of interest

The authors declare that no competing interests exist.

Ethical statement

No ethical statement is reported.

Funding

This study was financially supported by JSPS KAKENHI grant number JP23KJ0075, a grant-in-aid for Scientific Research of Lake Akkeshi and Bekanbeushi Wetland 2021, a grant from Rishiri Research Project (FY2024).

Author contributions

Conceptualization: NH. Data curation: NH, RK. Funding acquisition: NH, TY. Investigation: NH, RK, TY. Resources: TY, RK. Supervision: TY. Visualization: RK, NH. Project administration: TY, NH. Writing – original draft: NH. Writing – review and editing: RK, TY.

Author ORCID iDs

Natsuki Hirakizawa  <https://orcid.org/0009-0005-1745-1160>

Ryosuke Kuwahara  <https://orcid.org/0009-0006-8889-0205>

Data availability

All data that support the findings of this study are available in the main text.

REFERENCES

- Attems C** (1909) Die Myriopoden der Vega-Expedition. Arkiv för Zoologi 5 (3): 1–84. <https://doi.org/10.5962/bhl.part.3495>
- Attems C** (1951) Revision systématique des Colobognata (Myriapodes Diplopodes) et description d'espèces nouvelles. Mémoires du Muséum national d'Histoire naturelle, Nouvelle série, Série A, Zoologie 3 (3): 193–231.
- Enghoff H, Dohle W, Blower JG** (1993) Anamorphosis in millipedes (Diplopoda)—the present state of knowledge with some developmental and phylogenetic considerations. Zoological Journal of the Linnean Society 109 (2): 103–234. <https://doi.org/10.1111/j.1096-3642.1993.tb00305.x>
- Enghoff H, Golovatch S, Short M, Stoev P, Wesener T** (2015) Diplopoda—taxonomic overview. In: Minelli A (Ed.) The Myriapoda, volume 2. Treatise on zoology—anatomy, taxonomy, biology. Brill, Leiden, the Netherlands & Boston, USA, 363–453.
- Gongalsky KB, Kuznetsova DM, Elagin AD, Malyavin SA, Zaytsev AS** (2014) Почвенная мезофауна юга острова Кунашир (Курильские острова) [Soil macrofauna of Kunashir Island (Kuril Islands)]. Transactions of the Russian Academy of Sciences 457 (3): 370–373. <https://doi.org/10.7868/s0869565214210282> [in Russian]

- Maehara T, Hagiwara Y, Ishii K, Itoh R, Kurozumi T, Sakayori H, Suganami Y, Tamura H, Chinone S, Nakamura O, Naomi S, Nunomura N, Hagino Y, Miyata T, Ishibashi S** (2003) Soil animals from Rishiri Island, northern Hokkaido. Rishiri Studies 22: 55–72. [in Japanese with English abstract]
- Mikhajlova EV** (1990) On the fauna of Diplopoda in the Far East of the USSR. Zoologicheskii Zhurnal 69 (5): 134–138. [in Russian with English summary]
- Mikhajlova EV** (1998a) New and little-known millipedes (Diplopoda) from the Russian Far East. Far Eastern Entomologist 60: 1–8.
- Mikhajlova EV** (1998b) The millipedes of the Far East of Russia (Diplopoda). Arthropoda Selecta 7 (1): 1–77.
- Mikhajlova EV** (2004) The millipedes (Diplopoda) of the Asian part of Russia. Pensoft Series Faunistica No. 39. Pensoft, Sofia & Moscow, Russia, 292 pp.
- Mikhajlova EV** (2009) The millipedes (Diplopoda) of the Russian Far East Islands and the Kamchatka Peninsula. Soil Organisms 81 (3): 599–616.
- Mikhajlova EV** (2016) New species and new records of millipedes (Diplopoda) from the Asian part of Russia. Far Eastern Entomologist 316: 1–25.
- Mikhajlova EV** (2022) Millipedes (Diplopoda) of nature reserves in the Russian Far East. Biota and Environment of Natural Areas 10 (1): 26–49.
- Mikhajlova EV, Basarukin AM** (1996 [not 1995]) The millipedes (Diplopoda) of the Sakhalin and Kurile islands. Arthropoda Selecta 4 (3–4): 89–96.
- Mikhajlova EV, Marusik YM** (2006) Millipedes (Diplopoda) of the Kurile Islands. Bulletin of the Hokkaido University Museum 3: 115–127.
- Mikhajlova EV, Golovatch SI, Wytwer J** (2000) On some new or poorly-known millipedes (Diplopoda) from North Korea. Fragmenta Faunistica 43 (10): 109–122.
- Miyosi Y** (1959) Über japanische Diplopoden. The Arachnological Society of Eastern Asia, Osaka, Japan, 223 pp. [in Japanese with German title]
- Shelley RM** (1998 [not 1997]) The milliped family Polyzoniidae in North America, with a classification of the global fauna (Diplopoda Polyzoniida). Arthropoda Selecta 6 (3–4): 3–34.
- Shinohara K, Tanabe T, Korsós Z** (2015) Arthropoda, Myriapoda, Diplopoda. In: Aoki J (Ed.) Pictorial keys to soil animals of Japan. The second edition. Tokai University Press, Kanagawa, Japan, 941–984. [in Japanese with English title]
- Takakuwa Y** (1942) Die japanischen Colobognathenarten (Diplopoda). Zoological Magazine 54 (10): 424–426.
- Takakuwa Y, Miyosi Y** (1949) Über eine neue Gattung und eine neue Art von Coloboognatha aus Japan. Acta Arachnologica 11 (1–2): 26–32. [in Japanese with German summary]
- Verhoeff KW** (1941) Asyanın zoogeografiyası ve hayvan sistematigine hakkında - Asiatische Beiträge. II. Türkische Chilopoden 1. İstanbul Üniversitesi fen Fakültesi Mecmuası 6 (1–2): 85–117.